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PHOTOGRAPHIC INTERPRETATION REPORT

OMSK ROCKET ENGINE TEST FACILITY
USSR

AUGUST 1966
COPY 102
14 PAGES

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DECLASS REVIEW BY NIMA/DOD

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OMSK ROCKET ENGINE TEST FACILITY USSR

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HIGHLIGHTS OF THE DEVELOPMENT OF OMSK ROCKET ENGINE TEST FACILITY

1961

The test facility was first observed in [] at which time the initial stages of construction prevailed. Several buildings were under construction, a pipeline scar from the test facility back to the support area was visible, the access road was completed, and the rail spurs were probably under construction. By [] a total of about 13 structures were present, including Test Stand No 1.

1962 - 1963

The security system, consisting of a wall and fence, was started and completed during the year, construction of the probable disposal plant was initiated, Test Stand No 1 may possibly have been complete by [] and the 2 probable dewar-type tanks adjacent to item 35 were seen for the first time. The first signs of construction activity were observed at the site of Test Stand No 2. By the end of the year approximately 42 structures were present at the facility.

By the end of 1963, 51 structures were present at the facility.

1964

The new wing on item 35, the foundation for item 2, pipeline scars from item 3 to the steamplant and toward

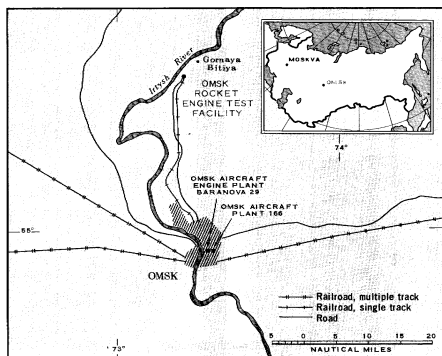


FIGURE 1. LOCATION MAP.

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INTRODUCTION

This report is concerned primarily with the chronological development of the liquid rocket engine test facility near Omsk, USSR. Table 2 summarizes the available data derived from 33 photographic missions that have covered the facility in the time period starting []. The critical study of all the photography covering the facility has resulted in interpretations of functions of certain structures; these interpretations are presented in the following sections of this report.

The Omsk Rocket Engine Test Facility [] is located at 55-25N 73-16E, about 28 nautical miles north of the city of Omsk on the east bank of the Irtysh River (Figure 1). The installation occupies a relatively flat area that has been dissected by ravines or gullies which trend in a northwest-southeast direction (Figures 2 and 3). The sites of the 2 large vertical rocket engine test stands at the facility were chosen to take advantage of the topography (Figure 3), i.e., the stands were built on the edge of the largest gully in the immediate area so that the construction problems of flame deflectors and means of disposal for coolant water could be held to a minimum.

Table 2 is a detailed summarization of the chronological development of the facility; Figure 4 is a plan view of the facility in which structures are color coded to show their construction chronology. It should be recognized that in many cases the determination of starting and completion dates is a value-judgment based on intermittent photographic data. The photographic coverage, although relatively frequent, was often of poor quality and inadequate scale, particularly during the [] period. These factors account for those items which are reported as first observed and complete on the same date. Furthermore, on the poorer coverages, it is not possible to determine with certainty whether or not any structure is complete, muchless operational.

the probable disposal plant, and the security wall around item 57 were observed during the year. By the end of the year 57 structures were present.

1965

A possible tank north of item 25, two possible tanks west of item 9, the probable water tower under construction southeast of item 26, and the probable waterline to Test Stand No 2 were observed during the year. By the end of the year 59 structures were present at the facility.

1966

One additional structure has been built so far in 1966, making a total of approximately 60 structures present in and immediately adjacent to the test facility.

PHOTOGRAPHIC EVIDENCE OF FIRINGS AT TEST STAND NO 1

The following table (Table 1) indicates the coverage upon which evidence of test firings was observed. It should be noted that after initial firings have taken place, it is not possible to distinguish between the residual effects of previous firing(s) and recent firings on non-

Table 1. Chronology of Firings at Test Stand No 1

Mission	Date	Observation
		First evidence of a possible firing
		Residue from firing(s) clearly visible on snow cover
		Burn marks and discoloration of vegetation opposite test stand may be residual effects of previous firing(s)
		Residue from firing(s) clearly visible on snow cover
		Residue from firing(s) clearly visible on snow cover
		Residue from firing(s) clearly visible on snow cover
		Residue from firing(s) clearly visible on snow cover
		Burn marks may be residual effects of previous firing(s)
		Residue from firing(s) clearly visible on snow cover
		Evidence of firing(s) questionable on snow-covered terrain opposite test stand
		Burn marks may be residual effects of previous firing(s)
		Burn marks may be residual effects of previous firing(s)
		Burn marks may be residual effects of previous firing(s)
		Burn marks may be residual effects of previous firing(s)

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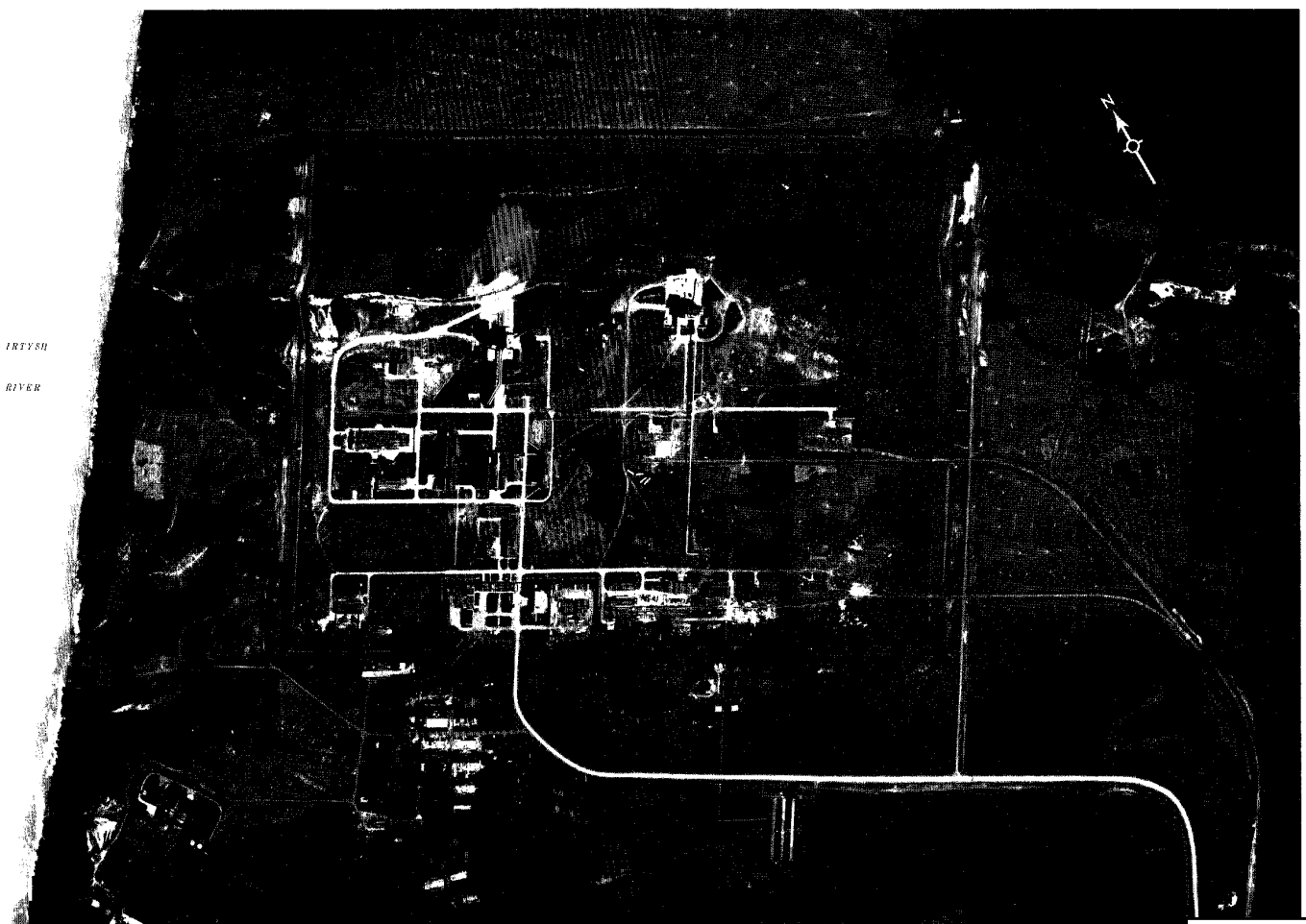


FIGURE 2. OMSK ROCKET ENGINE TEST FACILITY, OMSK, USSR.

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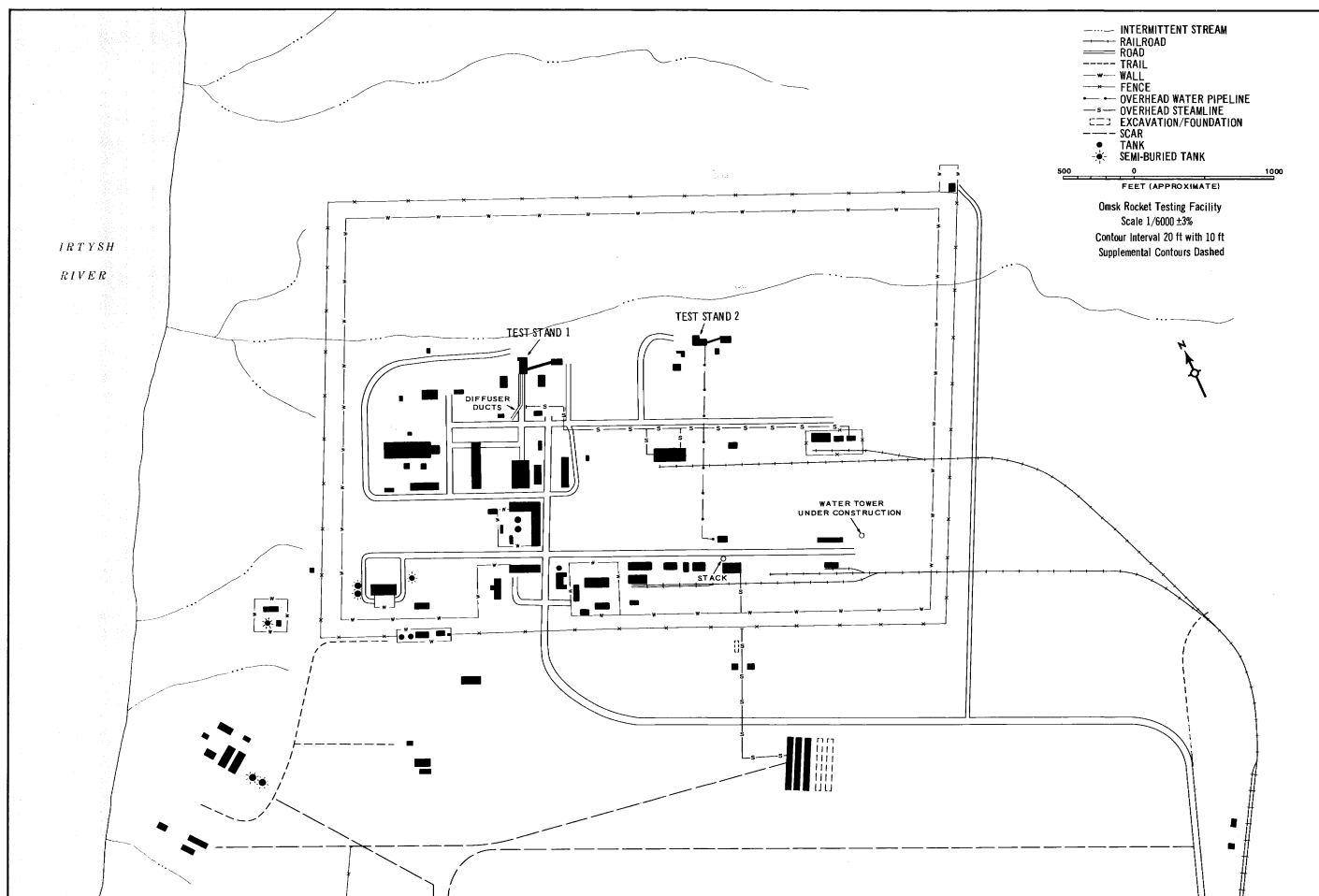


FIGURE 3. TOPOGRAPHICAL MAP OF OMSK ROCKET ENGINE TEST FACILITY.

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Table 2. Functions, Dimensions, Roof Cover, and Chronology of Structures at Onak Rocket Engine Test Facility
(Item Numbers are Keyed to Figure 4.)

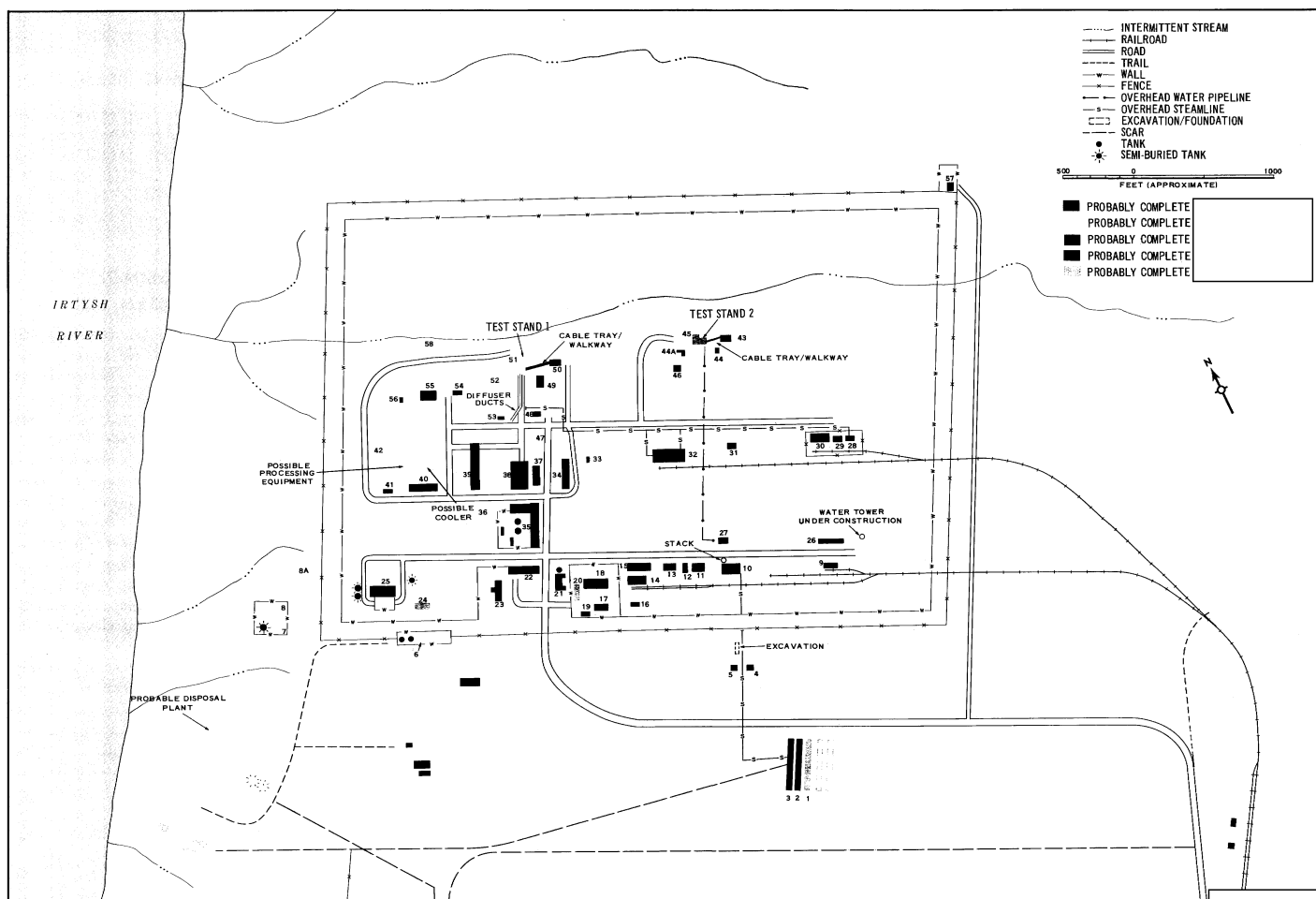
Item No	Function	Dimensions* (ft)			Roof Cover (sq ft)	Date First Observed	Date Prob. Complete**	Explanatory Notes
		Length	Width	Height				
1	Prob water treatment bldg							These bldgs probably house filter beds for water treatment.
2	Prob water treatment bldg							
3	Prob water treatment bldg							
4	Poss pumphouse							
5	Poss pumphouse							
6	U/I support bldg & tanks							
7	U/I support bldg & tanks							
8/8A	U/I support bldg & tanks							
9	Receiving/shipping bldg							
10	Steamplant							
11	Shops, shipping & receiving bldgs							
12								
13								
14								
15								
16	Prob equipment repair shop, storage & miscellaneous support bldgs							
17								
18								
19								
20								
21	Administration bldg							
22	Admin/engineering/lab bldg							
23	Admin/engineering/lab bldg							
24	U/I support bldg							
25	Poss diesel generating plant							
26	U/I support bldg							
27	Prob pumphouse							
28	Shipping/receiving bldgs							
29								
30								
31	U/I bldg							
32	Poss fuels/oxidizer receiving bldg							
33	U/I bldg							
34	Poss components assembly/test/bldg							
35	Air liquefaction plant							
36	Prob pump/valve house							
37	Assembly & checkout bldg							
38	Assembly & checkout bldg							
39	Poss pump/compressor bldg							
40	Prob shop/fabrication bldg							
41	U/I bldg							
42	Poss fuels processing/fabrication facility							
43	Control & instrumentation bldg							
44/44A	Test stand support bldg							
45	Test Stand No 2							
46	Test stand support bldg							
47	U/I support bldg							
48	10 vertical tanks & 1 bldg							
49	Test stand support structure							
50	Control & instrumentation bldg							
51	Test Stand No 1							
52	Test stand support structure							
53	Prob test stand support bldg							
54	U/I structure							
55	U/I bldg							
56	U/I bldg							
57	Storage bldg							
58	U/I bldg							
	Rail lines							
	Waterline to stand No 2							
	Steamlines							
	Water tower							
	Prob disposal plant							
	Security system							
							Waterline u/c []	
							Steamline prob complete to some bldgs by []	
							Initial construction activity []	

*Measurements made on fair-quality oblique K17 photography. Plan dimensions are believed to be accurate to 15 ft or 5 percent, whichever is greater.
**Completion dates should be used with caution. Many are value-judgments based on poor-quality photography. Furthermore, there is no fixed relationship between the time a structure is apparently complete and the date when it becomes operational.
Probable accuracy of completion dates: plus or minus 6 mo to 1 yr in extreme cases.

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FIGURE 4. LAYOUT OF OMSK ROCKET ENGINE TEST FACILITY.

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snow-covered terrain. Evidence of test firings on snow-covered terrain is usually clear and unmistakable.

DESCRIPTIONS OF SELECTED STRUCTURES

Table 2 provides an interpretation of the function of each significant structure at the test facility. The following items are considered to be of sufficient importance to warrant a more detailed discussion. The item numbers are keyed to Figure 4.

TEST STAND NO 1 (ITEM 51)

This test stand is similar in most respects to Test Stand No 2 at the Kurumoch Rocket Engine Test Facility and to Test Stand No 1 at the Voronezh Rocket Engine Test Facility. The most significant difference between the Omsk Test Stand and the other two is the presence of 2 parallel probable diffuser pipes emanating from the back and side of the Omsk stand (Figures 5 and 6). Each of this pair of pipes is approximately [REDACTED] and has a flared end that terminates in midair approximately [REDACTED] above the ground. If the interpretation of these tubes as diffuser ducts is correct, it follows that the test stand probably has an altitude simulation capability which in turn suggests that upper stage engines are tested in this stand. Supporting facilities at Stand No 1 include the following: 1) a probable control and instrumentation building (item 50) which is connected to the stand by both a fairly large diameter pipe and an enclosed probable cable gallery; 2) 2 sheds (items 49 and 52) that probably house tankage and other, unidentified equipment and are linked by at least 2 sets of pipelines (one is a steamline) to each other and probably to the test stand; 3) item 48, which consists of 10 vertical tanks (possible steam accumulators or pressure tanks for purging or other pressurization systems), and an adjacent building; and 4) item 53, a building the purpose of which is not known.

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TEST STAND NO 2 (ITEM 45)

This test stand, still incomplete in [REDACTED] is unlike any other known stand in the Soviet Union. It will apparently be a 2 position stand; the 2 firing bays are dissimilar, suggesting the possibility that the stand was designed for sequential firing of 2nd and 3rd (on 1st and 2nd/3rd and 4th) stage engines (Figures 7 and 8). A rectangular structure somewhat higher than the access ramp projects from the northwest side of the stand. The upper horizontal surface of this structure has the appearance of an open work grating while the lower part appears to curve down under the ramp and merge with the main stand structure. This structure could be interpreted as an outlet or exhaust port for the gas used in an altitude simulator, thus serving the same purpose as the 2 large pipes extending from stand no 1. Insofar as it can be determined at the present stage of construction, item 43 is the analogue of item 50, i.e., the control and instrumentation building. It is also connected to the test stand by a massive probable cable gallery. Items 44 and 44A are analogues of items 49 and 52 at stand No 1 - they apparently have the same functions and are interconnected in the same fashion by at least 2 pipelines, one of which is a steamline, and presumably likewise linked to the test stand although the access ramps obscure the path of the pipes into the stand. The very large diameter probable water pipeline from item 27 to the test stand bifurcates near the southwest corner of the stand somewhat above the ramp level. One branch apparently enters the back of the stand near the top of the lower level and the other extends across the top of the lower level and enters the stand either through the roof of the lower level or through the back of the high-bay section. The reason for this unusual pipe configuration is difficult to determine; the probable interpretation is that it conveys coolant water to tanks located in the upper levels of this massive test stand; an alternate explanation is that the pipe conveys steam for use in an altitude simulation device and that

the steam accumulators are situated inside the upper part of the stand.

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AIR LIQUEFACTION PLANT (ITEM 35)

This plant is similar to air liquefaction facilities observed at the other Soviet large rocket engine test facilities. The building was nearly doubled in size by the addition of the wing on the southeast side in 1964. Four probable LOX trailers are visible in the parking lot adjacent to the southwest wall surrounding the plant on the [REDACTED] coverage.

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POSSIBLE FUELS PROCESSING/ FABRICATION FACILITY (ITEM 42)

This large, multilevel building has numerous steel stacks, several of which emit steam, and a tower section 60 feet high. Two sets of equipment are located near the building on the southwest side and are connected to the building by pipeline. One of the 2 sets of equipment appears to be either a group of vertical, closely spaced tanks or a small forced-draft cooler; the other appears to be 2 or more vertical tanks and 2 very small buildings. Another pipe system leads from the tower section about half way up, across more than half the width of the building and thence down through the roof. A third set of piping connects the main building with a small structure immediately to the northeast. The piping, tower section, and possible cooling equipment taken together suggest the possibility that some sort of liquid fuels processing may be carried out at this facility. On the other hand, the lack of tankage and the location away from the rail spurs tend to discourage this line of thought. There is a line of small, regular cut-outs or revetments, some of which contain small tanks or buildings, adjacent to the northwest end of the building and parallel to it. A similar structure is located at the Krasnoyarsk Rocket Engine Test Facility, lacking only the tower section to be essentially identical.

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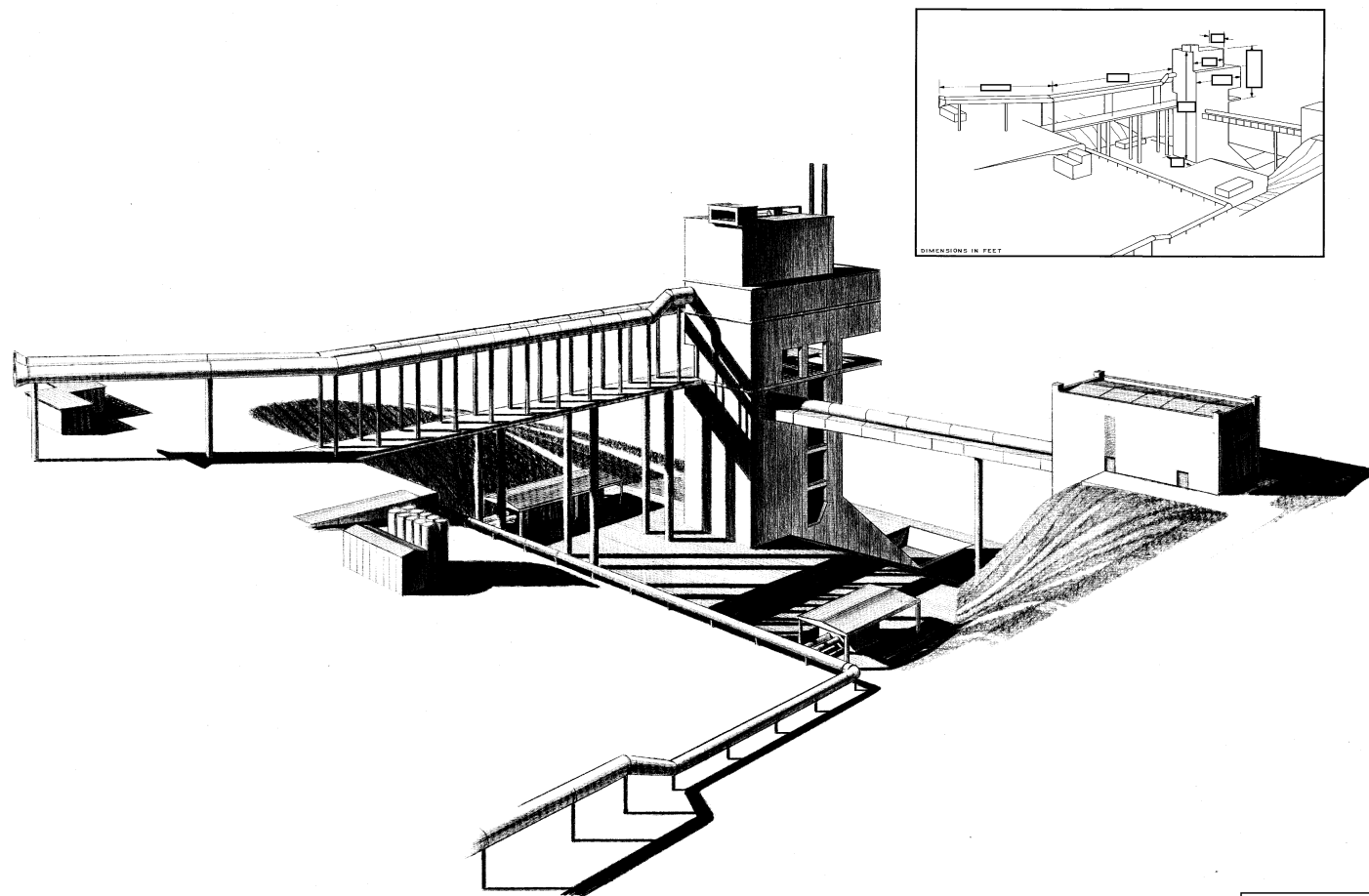


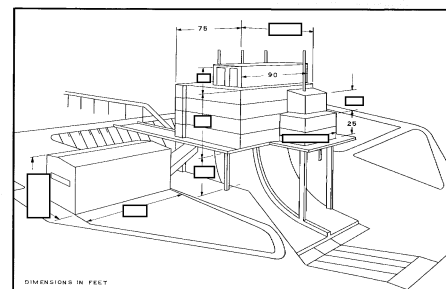
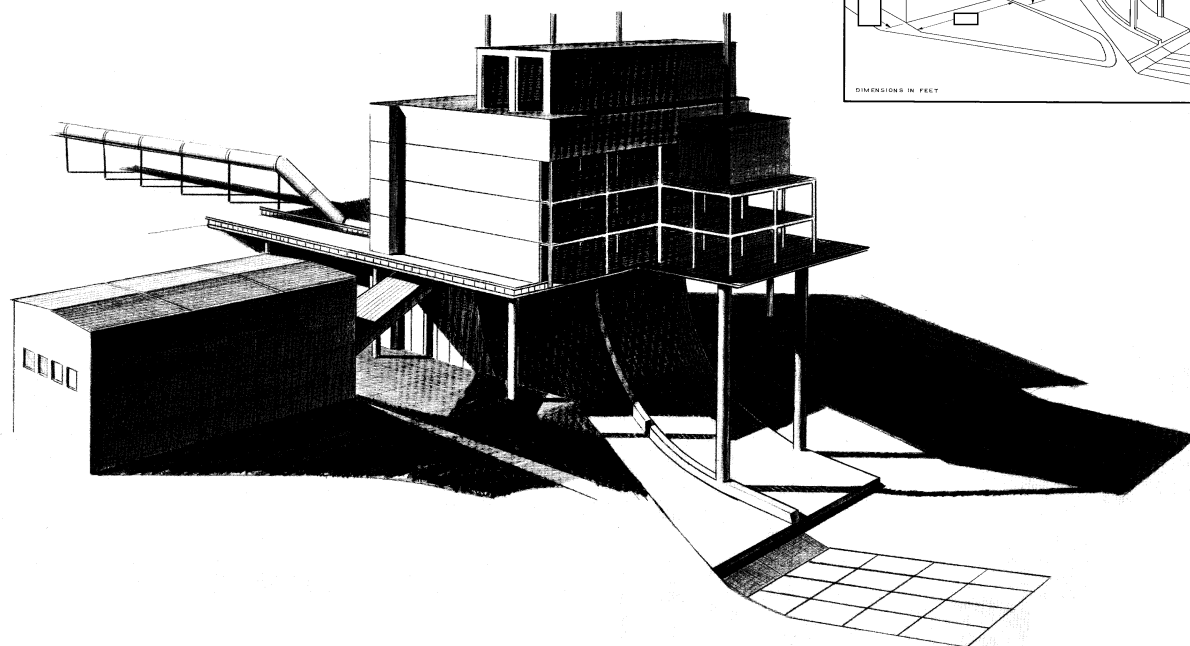
FIGURE 6. ARTIST'S CONCEPT OF TEST STAND NO 1 (VIEW TOWARD REAR OF STAND). The inset shows dimensions of significant parts of the facility.

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FIGURE 7. ARTIST'S CONCEPT OF TEST STAND NO 2 (VIEW TOWARD FRONT OF STAND). The inset shows dimensions of significant parts of the facility.

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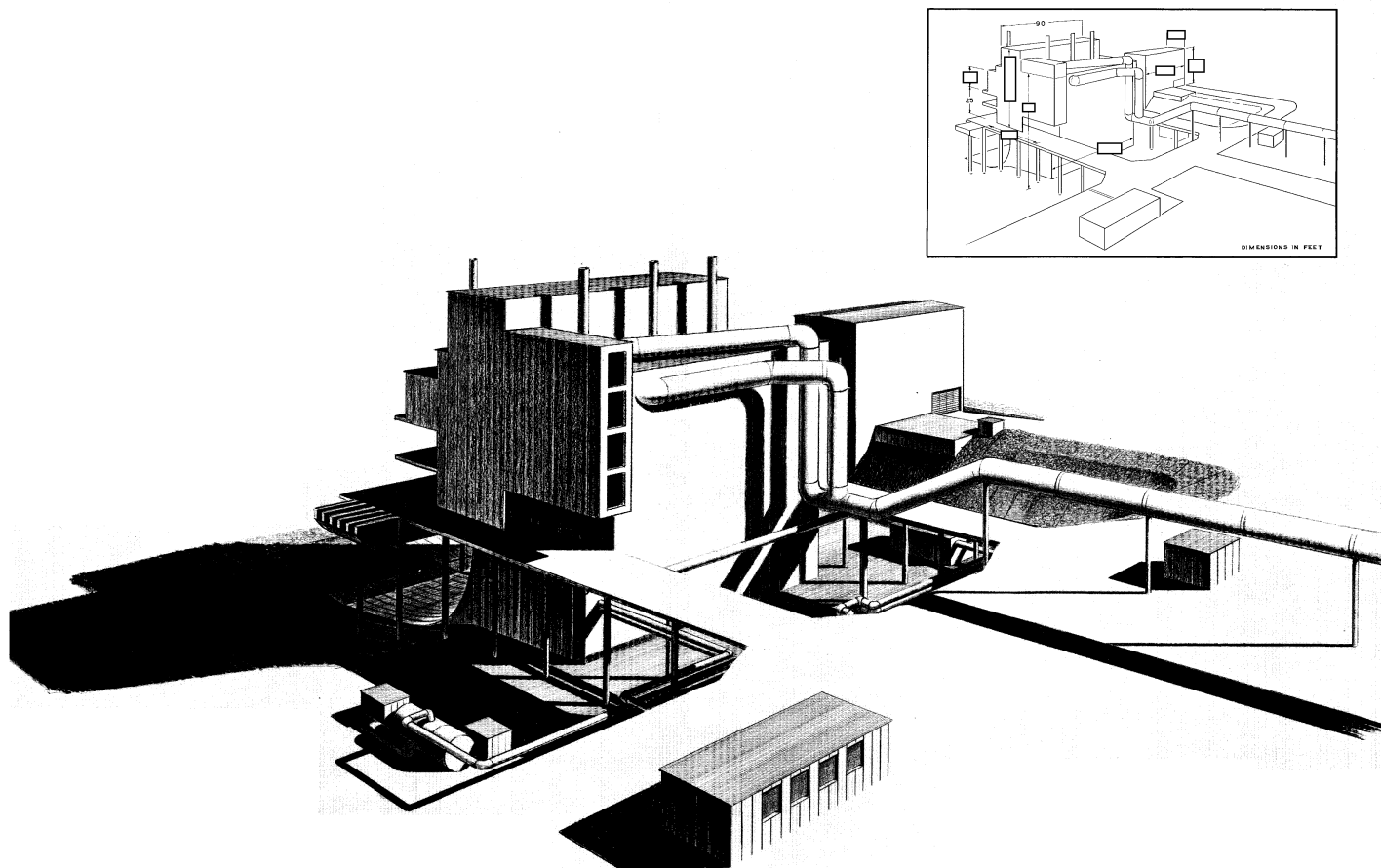
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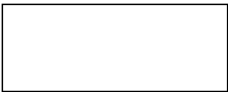
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FIGURE 8. ARTIST'S CONCEPT OF TEST STAND NO 2 (VIEW TOWARD REAR OF STAND). The inset shows dimensions of significant parts of the facility.

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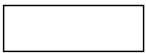


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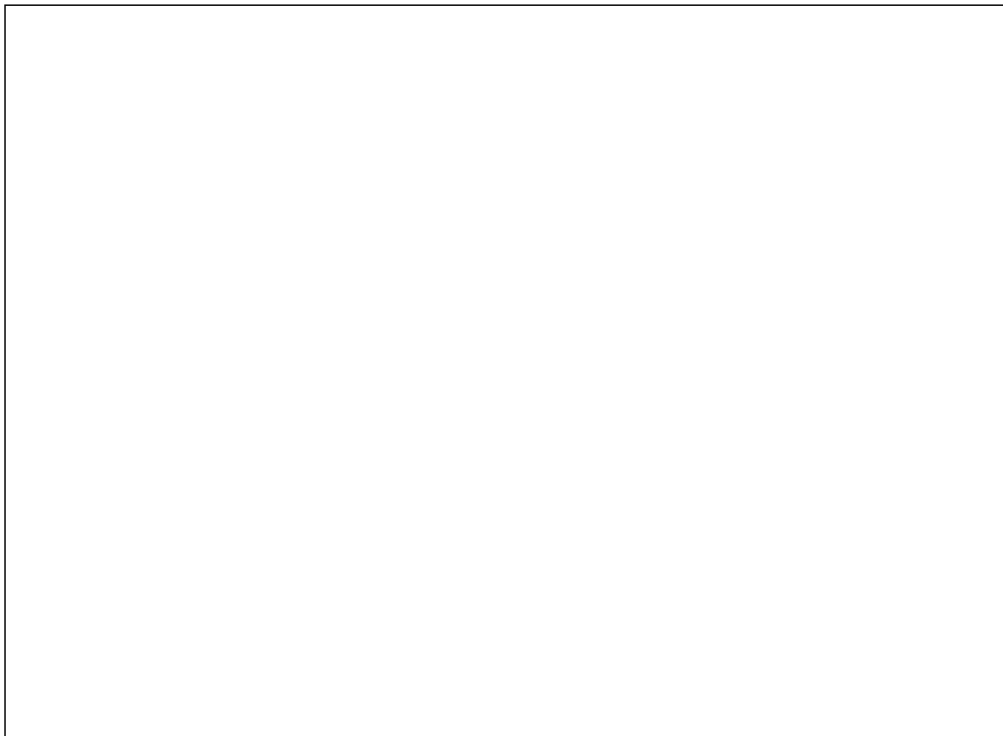
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REFERENCES

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PHOTOGRAPHY



MAPS OR CHARTS

SAC. US Air Target Chart, Series 200, Sheet 0163-5HL, 2d ed, Oct 63, scale 1:200,000 (SECRET)

REQUIREMENT

CIA. C-DI5-82,973 (partial answer)

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